MSI GEOSYSTEMS

Innovative Measuring & Positioning Systems

SURVEYING SYSTEMS
FALL 2014

Innovative Solutions for Precise Measuring & Positioning Applications

MSI POSITIONING SYSTEMS, LLC

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MSI SYSTEMS CATALOG

Innovative Measuring & Positioning Systems

Company Overview

MSI Geosystems (MSI) is engaged in the research, design, development, system integration, marketing, sales, service, support and distribution of an extensive range of robotic total stations, digital levels, GPS/GNSS systems, mobile handheld computers and application software. Typically, MSI system components are used to determine precise angles, distances, elevations, three-dimensional coordinates and geographic locations. MSI's precise measuring systems address the needs of professionals who demand accuracy, reliability and performance in dynamic environments.

Mission Statement

MSI's mission is to consistently deliver superior products that generates the highest possible return-on-investment for our customers. MSI's marketing objective is to become the value-priced leader of precise measuring and three dimensional positioning solutions for land surveyors, civil engineers, geotechnical engineers, contractors, and other geospatial professionals.

Technological Expertise

MSI's management team has over a century of combined experience in land surveying, engineering, GIS mapping, construction, industrial measuring and precise positioning. MSI will use its unique experience and expertise to supply instruments and services that will give a competitive advantage to our customers.

Principal Markets

MSI's principals markets are:

- Land Surveying, Civil/Geotechnical Engineering
- Construction, Quarrying and Mining Operations
- Utilities, Geophysics and Large Scale Mapping
- Industrial Measuring & Deformation Monitoring

Technical Support

MSI's Technical Assistance Center offers comprehensive technical support from a team of specialists with years of "hands-on" industry experience. Support is available to all customers by telephone, or email at no charge for the first year of ownership (support@msigeo.com)

Service Center

MSI's Service Center is one of the most competent repair facilities in North America, with expertise in robotic total stations, field computers and GPS/GNSS receivers. Services include: calibration, testing, cleaning, lubrication, firmware updates and routine maintenance. MSI's Service Center is qualified to service all major brands of surveying instruments, GPS/GNSS systems and data collectors.

Training

Customers have discovered they are able to increase productivity and efficiency on major projects requiring advanced measuring and positioning technologies, such as total stations, data collectors and GPS/GNSS systems, by investing in professional training.

Consulting

MSI offers a wide range of project consulting services for land surveyors, civil engineers, geotechnical engineers, contractors and others involved in precise measuring projects. MSI can assist customers on large scale projects on the proper use of instrumentation to improve efficiency and to maximize the investment in equipment.

For more information contact:

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MSI SYSTEMS CATALOG

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Egyptian rope stretchers in action, painting found in the tomb of Menna at Luxor (ancient Thebes) on the west bank of the Nile.
The date of the construction of this tomb is estimated to have been about 1200 BCE.

BUY ANY TOTAL STATION FROM MSI GEOSYSTEMS AND RECEIVE A FREE ACCESSORIES PACKAGE[1]

ACCESSORIES PACKAGE INCLUDES:

6502-11	Heavy Duty Tripod	$185.00
6507-14	8.5ft Carbon Fiber Prism Pole	$295.00
6519-03	Carbon Fiber Bipod	$295.00
6500-65	Range Pole Bracket/Clamp	$175.00
	Total Accessories Package =	**$950.00**

[1]Offer expires December 31, 2014

SX SERIES

Superior X-ellence Robotic Total Stations

KEY FEATURES

Superior Tracking Technology

RED-Tech Reflectorless EDM Measurements

Dual Axis Compensation

On-board Windows® CE Operating Systems

Advanced Angle Measurement Technology

Waterproof, Rugged, & Operator Friendly

Bluetooth® Wireless Technology

TSshield™ Security

Two-Year Warranty

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The SX series of Robotic Total Stations offers cutting edge laser technology, optimized optical design, newly developed motor drive mechanism, and further refined tracking algorithm to achieve extremely robust Auto Tracking capabilities. Advanced tracking algorithms also enhance the ability to predict future prism positions, dramatically increasing tracking stability. Even with intensive reflections from behind the prism or with repetitive interruptions in the line of sight, the SX tightly tracks a moving prism. The newly developed motor drive mechanism, and refined tracking algorithm allows the SX to instantly recover the prism ensuring increased productivity in all surveying and construction tasks.

One-Man Operation

The SX combines the latest in motorized tracking, angle accuracy, and software technology providing a one-man operation.

Its laser measurement and advanced image processing technologies provide reliable auto-tracking capabilities, even in dense woods or low light conditions. Point the SX in the general direction of the prism, press the trigger key, and the SX automatically points to the prism center enabling a single operator to rapidly take measurements.

RED-tech Technology

The RED-tech Reflectorless EDM provides increased accuracy and range with or without reflectors or prisms by incorporating a new optical design.

The ultra powerful RED tech can measure to a moving prism even with interruptions in the line of sight. The SX can obtain measurements as fast as 0.9 seconds to most objects in reflectorless mode.

Angle Measurements

The SX features absolute encoders that provides long term reliability for precise angle measurements, plus the dual axis compensator ensures exception stable measurements.

The SX 101T features IACS (Independent Angle Calibration System) technology for extremely reliable angle measurements. The coaxial optics, laser pointer, and EDM provide fast aiming to targets or prisms.

RC-PR5

The RC-PR5 “On-Demand Remote Controller” allows the SX Robotic Total Station to be controlled from the prism pole. The RC-PR5 directional sensor constantly monitors the prism so the SX can turn left or right, to whichever direction is closer for obtaining the prism.

Easy-to-use

The SX series of robotic total stations is a blend of tradition engineering and inspired innovation. With an IP65 rating, the SX is at home even on the most demanding jobsites.

The display on the SX is a backlit touchscreen LCD. The easy to use keypad is also backlit, with buttons that can be depressed with either a stylus or when wearing gloves.

TSshield™

Every SX is equipped with an unique communications module providing security capabilities.

If an activated instrument is lost or stolen, a coded signal can be sent to disable and/or locate the SX Total Station.

Product #	Description	SPECIAL[1]
4101-01	SX 101T 1” Robotic Total Station	$ 24,000
4101-03	SX 103T 3” Robotic Total Station	$ 19,390
4105-05	SX 105T 5” Robotic Total Station	$ 18,490
4505-15	RC-PR5 On-Demand Controller	$ 5,945

SX SERIES

Robotic Total Stations
Technical Specifications

Telescope	SX Series		
Image	Erect		
Magnification	30x		
Effective Aperture	45mm		
Length	168mm		
Field of View	1°30’		
Minimum Focus	1.3m (4.3ft)		
Resolving Power	2.5”		
Angle Measurement	**SX101T**	**SX103T**	**SX105T**
Method (Horizontal and Vertical Circles)	Rotary Absolute Encoder - Dual Detection		
Accuracy (ISO 17123 3:2001)	± 1”	± 3”	± 5”
Minimum Angle Display	0.5”	1”	1”
Vertical Compensator Type	Liquid - Dual Axis		
Vertical Compensator Range	± 6’	± 6’	± 6’
Vertical Compensator Accuracy	± 3”	± 4”	± 4”
Distance Measurement	**SX Series**		
Distance Range: Prism ATP1 Reflective Sheet Reflectorless	 1.3m to 1,000m 1.3m to 500m 0.3m to 800m		
Distance Accuracy: Prism/Reflector Reflective Sheet Reflectorless (@ 200m)	 ± 1.5mm + 2ppm ± 2.0mm + 2ppm ± 2.0mm + 2ppm		
Measuring Time: Fine Mode Rapid Mode Tracking	 < 1.5 sec < 1.3 sec < 1.3 sec		
General Specifications	**SX Series**		
Auto Tracking	Yes		
Auto Pointing	Yes		
Rotation Speed	85°/sec		
Working Range (w/ ATP1)	2m ~ 600m		
Operating System	Windows Embedded CE 6.0		
Display	3.5” Transmissive TFT QVGA Color LCD		
Memory	500MB Internal, USB Flash (8GB max)		
Interface	Serial RS-232C, USB 2.0 (Type A/ Mini B)		
Bluetooth	Class 1, V2.1 + EDR (Range 600m)		
Dust & Water Protection	IP65		
Operating Temperature	-20°C to +50°C (-4°F to +122°F)		
Dimension (W x D X H)	230mm x 207mm x 393mm		
Weight (BDC70 and Handle)	7.0 kg		
Battery (BDC70)	7.2V, 5.2Ah		
Operating Time (+20°C)	+ 4 hours		

DX SERIES

Auto-Pointing Total Stations

KEY FEATURES

Direct Aiming Technology

Advanced Angle Measurement System

Dual Axis Compensation

RED-Tech Reflectorless EDM Technology

Compact, Rugged & Lightweight

Bluetooth® Wireless Technology for cable free operation

Available in 1", 3", 5" Models

TSshield Security

Two-Year Warranty

The DX Auto-Pointing Total Stations take precise angle and distance measurements in less time than ever before. The auto pointing feature shortens the amount of time spent targeting the prism by enabling the DX to automatically find the prism, while the on-board software allows the user to make easy and confident calculations of complex surveying and engineering functions.

The long-range Bluetooth® communication modem will connect to an external field computer or data collector and with the optional robotic firmware upgrade will turn the DX into an economical state-of-the-art robotic total station.

Auto Pointing Technology

It's easy to accurately target prisms with the DX's Direct Aiming Technology, which can be used in poor or low lighting conditions, the DX is able to precisely locate the direction of the prism when moving. The DX uses an intelligent algorithm that automatically collimates to the prisms giving the correct angle readings. Just aim the DX towards the prism and press the trigger button and you will get a measurement to the target.

Bluetooth Communication

The exclusive LongLink™ communication allows a user to enjoy the benefits of an economical robotic total station by connecting the DX to an external data collector. Record data for feature codes and rod heights at the prism up to 1,000 ft. away.

Accurate Measurements

The DX features numerous measurement options, so the user can choose the option that best fits the job at hand. Quickly measure distances to any object via its Reflectorless mode, or to a prism. Users will especially appreciate the DX patented RED-tech technology, which has an ultra narrow beam that makes it easy to measure.

Confidently measure to roof overhangs, manhole covers or building corners with unerring accuracy. Unlike standard total stations which have wide laser beams the DX laser beam measures only the target area and not the surrounding area.

Plus the motorized DX uses only one beam for both the laser pointer and the EDM which prevents frustrating measurement errors, while ensuring fast and accurate aiming at 0.9 seconds per measurement.

Smart Design

The DX is ideally suited for jobs requiring precision measurements with simple operation. Its Direct Aiming Technology, featuring a new intelligent algorithm that automatically aims to the prism, ensures precise readings.

The DX is also ideal for dim or dark conditions where the prism is difficult to locate. When the project requires a state of the art total station, the DX makes the job easier

TSshield™

Every DX is equipped with an unique communications module providing security capabilities.

If an activated instrument is lost or stolen, a coded signal can be sent to disable and/or locate the DX Total Station.

ATP1 360° Prism
MSRP $1,428

Product #	Description	MSRP
4202-01	DX 201AC 1" Auto Pointing Total Station	$19,990
4202-03	DX 203AC 3" Auto Pointing Total Station	$16,790
4202-05	DX 205AC 5" Auto Pointing Total Station	$15,490
4502-22	DX Robotic Firmware Upgrade	$1,400

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DX SERIES

Reflectorless Total Stations
Technical Specifications

Telescope	DX Series		
Image	Erect		
Magnification	30x		
Effective Aperture	45mm		
Length	168mm		
Field of View	1°30'		
Minimum Focus	1.3m (4.3ft)		
Resolving Power	2.5"		
Angle Measurement	**DX201AC**	**DX203AC**	**DX205AC**
Method (Horizontal and Vertical Circles)	Rotary Absolute Encoder - Dual Detection		
Accuracy (ISO 17123 3:2001)	± 1"	± 3"	± 5"
Minimum Angle Display	0.5"	1"	1"
Vertical Compensator Type	Liquid - Dual Axis		
Vertical Compensator Range	± 6'	± 6'	± 6'
Vertical Compensator Accuracy	± 3"	± 4"	± 4"
Distance Measurement	**DX Series**		
Distance Range: Prism ATP1 Reflective Sheet Reflectorless	 1.3m to 1,000m 1.3m to 500m 0.3m to 800m		
Distance Accuracy: Prism/Reflector Reflective Sheet Reflectorless (@ 200m)	 ± 1.5mm + 2ppm ± 2.0mm + 2ppm ± 2.0mm + 2ppm		
Measuring Time: Fine Mode Rapid Mode Tracking	 < 0.9 sec < 0.6 sec < 0.3 sec		
General Specifications	**DX Series**		
Auto Tracking	Yes[1]		
Auto Pointing	Yes		
Rotation Speed	85°/sec		
Working Range (w/ ATP1)	2m ~ 600m		
Operating System	Windows Embedded CE 6.0		
Display	3.5" Transmissive TFT QVGA Color LCD		
Memory	500MB Internal, USB Flash (8GB max)		
Interface	Serial RS-232C, USB 2.0 (Type A/ Mini B)		
Bluetooth	Class 1, V2.1 + EDR (Range 600m)		
Dust & Water Protection	IP65		
Operating Temperature	-20°C to +50°C (-4°F to +122°F)		
Dimension (W x D X H)	230mm x 207mm x 393mm		
Weight (BDC70 and Handle)	7.0 kg		
Battery (BDC70)	7.2V, 5.2Ah		
Operating Time (+20°C)	+ 5 hours		

[1]Optional Firmware Upgrade

CX SERIES

Reflectorless Total Stations

KEY FEATURES

Reflectorless Measurement Technology

Dual Displays and Keyboards

Dual Axis Compensation

Low Power Consumption for 36 hrs. field operation

Advanced Technology

Compact, Rugged & Lightweight

Bluetooth® Wireless Technology for cable free operation

Available in 1", 2", 3", 5" Models

TSshield™ Security

Two-Year Warranty

Bluetooth®

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The CX series of Reflectorless Total Stations innovative technology provides unparalleled performance, reliability and precision for land surveyors, civil engineers, contractors, archaeologists, and accident scene investigators. The CX powerful onboard computer helps to improve productivity by performing time consuming calculations with the touch of a few buttons. The angle measurement function allows users to measure horizontal angles between points. The Reflectorless EDM can measure to targets, reflector sheets, prisms or to most hard surfaces up to 1,640 feet. The CX makes measuring to difficult to reach or dangerous locations safe and simple.

Increase Productivity

The CX incorporates several new technologies yet is easy to use. Some of the features included are RED-tech Reflectorless measuring technology, coaxial EDM and laser pointer for fast and accurate aiming.

All of this plus IP66 dust proof and waterproof rating, heavy duty metal chassis and 36 hours of battery life makes the CX series the new standard for all precise measuring applications.

Use the powerful onboard computer to finish more measurements in less time. Easily determine setting out lines or curves, offset and missing line measurements, point projections, coordinate measurements, surface areas and much more with just a few buttons.

Regardless of the number of measurements, the 10,000 point internal memory and the included 8GB USB flash drive, ensures that plenty of memory is available for data storage.

Bluetooth Communication

The exclusive LongLink™ communication functionality of the CX series provides operational capabilities never before offered in a total station. With up to a 300 meter range, the built in Bluetooth modem, provides the operator with reliable wireless data communicating without the need of cables to transfer data to any other Bluetooth enabled computer or data collector.

Rugged Design

The CX is designed to withstand the tough conditions involved in land surveying and construction site layout. Durable and long lasting, the CX metal chassis is designed for rugged field use, while the IP66 rating ensures the CX can handle dust and water exposure on any site.

User Friendly

The CX is technologically sophisticated but also user friendly. The CX control panel features a 10 key pad with a large, easy to read LCD screen that provides optimum viewing. The one touch star key offers instant access to functions and the trigger key, lets users take a series of measurements with the push of a single button. The built-in guide light, which makes stake out easier, has a range of 150 meters. The built-in laser plummet has five levels of brightness.

TSshield™

Every CX is equipped with an unique communications module providing security capabilities.

If an activated instrument is lost or stolen, a coded signal can be sent to disable and/or locate the CX Total Station.

Product #	Description	MSRP
4404-01	CX 101 1" Reflectorless Total Station	$13,490
4404-02	CX 102 2" Reflectorless Total Station	$11,290
4404-03	CX 103 3" Reflectorless Total Station	$10,290
4404-05	CX 105 5" Reflectorless Total Station	$8,990

CX SERIES

Reflectorless Total Stations
Technical Specifications

Telescope	CX Series			
Image	Erect			
Magnification	30x			
Effective Aperture	45mm			
Length	171mm			
Field of View	1°30’			
Minimum Focus	1.3m (4.3ft)			
Resolving Power	2.5”			
Angle Measurement	**CX101**	**CX102**	**CX103**	**CX105**
Method (Horizontal and Vertical Circles)	Rotary Absolute Encoder - Dual Detection			
Accuracy (ISO 17123 3:2001)	± 1”	± 2”	± 3”	± 5”
Minimum Angle Display	0.5”	1”	1”	1”
Vertical Compensator Type	Liquid - Dual Axis			
Vertical Compensator Range	± 6’	± 6’	± 6’	± 6’
Vertical Compensator Accuracy	± 3”	± 4”	± 4”	± 4”
Distance Measurement	**CX Series**			
Distance Range: Prism CPO1 Reflective Sheet Reflectorless	 1.3m to 2,500m 1.3m to 500m 0.3m to 500m			
Distance Accuracy: Prism/Reflector Reflective Sheet Reflectorless	 ± 2.0mm + 2ppm ± 2.0mm + 2ppm ± 3.0mm + 2ppm			
Measuring Time: Fine Mode Rapid Mode Tracking	 < 1.5 sec < 1.3 sec < 1.3 sec			
General Specifications	**CX Series**			
Display	LCD Graphic Display (192 x 80) w/ Backlight			
Keyboard	25 Keys (soft functions, operations, power, etc.)			
Auto Power	5 Levels (selectable)			
Internal Memory	1MB Internal, USB Flash (8GB max)			
Interface	Serial RS-232C, USB 2.0 (Type A/ Mini B)			
Bluetooth	Class 1, V2.1 + EDR (Range 600m)			
Dust & Water Protection	IP66			
Operating Temperature	-20°C to +50°C (-4°F to +122°F)			
Dimension (W x D X H)	191mm x 181mm x 348mm			
Weight (BDC70 and Handle)	5.6 kg (12.3 lb)			
Battery (BDC70)	7.2V, 5.2Ah			
Operating Time (+20°C)	+ 36 hours			

MTS SERIES

Reflectorless Total Stations

KEY FEATURES

Reflectorless Measurement Technology

Dual Displays and Keyboards

Dual Axis Compensation

Low Power Consumption for 8 hrs. of field operation

Advanced Technology

Compact, Rugged & Lightweight

Bluetooth® Wireless Technology for cable free operation

Interfaces with all major brands of data collection systems

One-Year Warranty

For additional information:

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The MTS series of Total Stations offers state-of-the-art technology at affordable pricing. The MTS series is available in two angle accuracy models (2" or 5"). The MTS series is designed to increase efficiency and maximize productivity, which allows for significant time savings in three-dimensional measuring activities.

The MTS series of total stations combines advanced features such as reflectorless measuring, dual axis compensator, Bluetooth, USB interface, hi-definition displays and alpha-numeric keyboards. MSI's advanced mechanical, optical and electronic technologies, makes the MTS series an exceptional value with a better than average return-on-investment.

Reflectorless Technology

From time to time, objects to be precisely located are in dangerous, hazardous, or inaccessible areas where using a reflective prism would be difficult or even impossible. The MTS series can measure and locate remote objects to a distance of ±985' (300m) and to an accuracy of ±0.01' (3mm) without the need of targets and/or prism or placing anyone in harms way.

The MTS series is ideal for a wide range of surveying, engineering, construction and mapping applications and will allow users to quickly and accurately measure distances to remote objects that may be over difficult terrain or just plain inaccessible.

Rugged Design

The MTS series of total stations are designed to work in the most rugged of conditions without the worry of damaging the instrument due to harsh environments.

Easy to Lean and Operate

The MTS series has been designed to be simple to use so that both experienced and inexperienced users can be fully operational within a few short minutes. The easy to follow interface has a shorter learning curve than most other total stations.

Increased Productivity

The MTS series provides an inexpensive way to improve measurement productivity and with multiple interface ports to communicate with field computers and/or data collectors, the MTS series will significantly reduce manual entry errors.

Backlit alphanumeric LCD displays, dual keyboards, internal memory, dual axis compensation, absolute encoders, 30x magnification, USB interface and backed by MSI's technical support makes the MTS series of total stations an excellent choice for most projects.

Bluetooth Enabled

The MTS series of total stations supports wireless Bluetooth communications for cable free interface to external field computers and data collectors.

The MTS series provides a number of other ways to transfer data from the field to the office.

Total System Solutions

One year warranty plus free technical support and "on-site" training programs completes MSI's Total System Solution.

MSI offers specially priced system bundles for the MTS series, which includes field data collectors/computers, application software, and accessories to complete a turn-key ready system.

Product #	Description	MSRP
4505-02	MTS 2" Reflectorless Total Station	$4,995
4505-05	MTS 5" Reflectorless Total Station	$4,495

MTS SERIES

Reflectorless Total Stations
Technical Specifications

Telescope	MTS Series	
Image	Erect	
Magnification	30x	
Effective Aperture	45mm	
Length	154mm	
Field of View	1° 30'	
Minimum Focus	1m	
Resolving Power	3"	
Angle Measurement	**MTS-2R**	**MTS-5R**
Method	Absolute Encoding - Dual Detection	
Accuracy (DIN 18723)	± 2"	± 5"
Minimum Angle Readout	1"	5"
Vertical Compensator Type	Liquid Electric - Dual Axis Compensation	
Vertical Compensator Range	± 3'	
Vertical Compensator Accuracy	± 1"	
Distance Measurement	**MTS Series**	
Single Prism	± 16,400ft (5,000m)	
Reflectorless	± 985ft (300m)	
Distance Accuracy: Prism/Reflector Reflectorless	 ± 2mm + 2ppm ± 3mm + 5ppm	
Measuring Time: Fine Mode Tracking	 ± 1.0 sec ± 0.5 sec	
Prism Constant	Manual Input with Auto Correction	
Refraction & Curvature	Manual Input with Auto Correction	
Levels		
Plate Level Vial	30"/2mm	
Circular Level Vial	8'/2mm	
Optical Plummet		
Image	Erect	
Magnification	3x	
Focusing Range	0.5m ~ ∞	
Field of View	5°	
Displays/Keyboards		
Displays	2x (8 lines)	
Keyboards	2x (Alphanumeric)	
Battery		
Type	6V DC Ni-H Rechargeable	
Operating Time	8 hours	
Dimension		
Dimension	7.87" x 7.48" x 13.78" 200mm x 190mm x 350mm	
Weight	13.78 lbs. 6.0 kg	

X91+

Dual Frequency GNSS Receiver

KEY FEATURES

220 Channel GNSS Receiver, Antenna, Radio and Battery in one compact unit

Low Power Consumption

Accurate, Reliable & Rugged

Advanced Technology & Integrated Design

Built-in GPRS modem and UHF data Link RTK Base/Rover

Easy to use for immediate productivity

Bluetooth® Wireless Technology for cable free operation

Compatibility with Field Computers

Two-Year Warranty

For additional information:

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The X91+ is a compact 220 Channel GNSS receiver designed for high accuracy and productivity even in harsh environments. The X91+ provides a cost effective solution to any surveying project. The X91+ combines the most comprehensive features into an integrated and flexible RTK system. Easy to use, efficient and intuitive work flow, designed for advanced network RTK survey, compact and rugged. The X91+ is the perfect choice for demanding survey applications.

Proven GNSS Technology

By combining decades of GPS positioning experience and know-how, the X91+ GNSS Receiver is one of the most powerful RTK solutions available.

With its ability to track more satellites, the X91+ GNSS receiver will improve survey productivity by tracking more satellites.

By adding a MSI's Field Computer this system creates a seamless, cable free and lightweight RTK network Rover. The X91+ is a powerful GNSS receiver featuring advanced RTK Technology.

Total Solution

The X91+ is versatile and can be used for almost any type of land surveying, civil engineering or construction task.

The X91+ was designed with compatibility in mind and it is a ready fit solution to your existing GPS/GNSS survey equipment. This high tech receiver combines outstanding performance and productivity with exceptional economy.

Compact and Lightweight

The X91+ is compact, light-weight and cable free. The X91+ is rugged, weather resistant and compatible with a wide range of RTK radio solutions.

The X91+ combines an advanced GNSS receiver, precision antenna, long-life Lithium Ion batteries and multi communications options into a compact unit.

Communications

For extra convenience the X91+ includes Bluetooth for wireless connection to most Field Computers or Data Collectors. The X91+ is compatible with today's data collection software packages.

The X91+ integrates multi communication options that best fit how you work. An integrated cellular modem streamlines operation with most VRS networks.

Optimized for RTK

The X91+ functions as a VRS Rover, RTK Rover or RTK Base Station. With its built-in GSM/GPRS/Digital UHF modem the X91+ can be easily integrated into both private as well as public RTK networks.

Rugged and Reliable

The X91+ GNSS receiver and antenna, UHF radio and GSM/GPRS modem are fully protected from water, dust and shock. This rugged design makes the X91+ ideal for tough environments. The X91+ GNSS receiver delivers the precision and reliability needed for precise surveying. With superior SV tracking performance the X91+ is the everyday GNSS receiver required for land surveyors, civil engineers and/or contractors.

X91+ Bundles

The X91+ can be bundled in various configurations. Contact MSI Support for more information.

Product #	Description	MSRP
2191-12	X91+ GNSS RTK Receiver	$ 8,995
2195-04	X91+ Rover Kit	$ 790
2195-05	X91+ Base Station Kit	$ 490

X91+

Dual Frequency GNSS Receiver
Technical Specifications

GNSS Sensor	X91+	
Receiver Type	GNSS 220 Channels	
Channels	12 x L1CA GPS, 12 x L1P GPS , 12 x L2P GPS, 12 x L2C GPS 12 x L1 GLONASS, 12 x L2 GLONASS 3 x SBAS or 3 additional L1CA GPS, 1 x L-Band	
Update Rate	10 Hz standard (20Hz available)	
Timing (1PPS) Accuracy	20 ns	
Cold Start Time	< 60s typical (no almanac or RTC)	
Warm Start Time	< 30s typical (no almanac or RTC)	
Hot Start Time	< 10s typical (almanac, RTC and position)	
Maximum Speed	1,850 kph (999 kts)	
Differential Options	SBAS, Autonomous, External RTCM, RTK,	
Horizontal Accuracy		
	RMS (67%)	2DRMS (96%)
RTK	H: 10mm + 1ppm V: 15mm + 1ppm	20mm + 2ppm 30mm + 2ppm
STATIC	H: 3mm + 0.5ppm V: 4mm + 1ppm	
OmniSTAR HP	< 0.1 m	< 0.2m
SBAS (WAAS)	< 0.3 m	< 0.6m
Autonomous	< 1.2 m	< 2.5m
Communications		
Serial Ports	3 full duplex RS232	
Baud Rates	4,800 - 115200	
Correction I/O Protocol	Hemisphere GPS proprietary, RTCM v2.3, (DGPS), RTK v3, CMR, CMR+	
Data I/O Protocol	NMEA 0183, Hemisphere GPS binary	
Timing Output	1 PPS (HCMOS, active high, rising edge sync, 10kΩ, 10 pF load	
Event Marker Input	HCMOS, active low, falling edge sync, 10kΩ	
USB	1 USB Host, 1 USB Device	
Power		
Input Voltage	8 to 36 VDC	
Power Consumption	< 4.3 W nominal (using L-Band); < 3.5 W nominal (no L-Band)	
Current Consumption	355 mA nominal (@ 12 VDC using L-Band); 295 mA nominal (@ 12VDC no L-Band)	
Environmental/Mechanical		
Environmental Specification	Operating temp: -40°F to 158°F (-40°C to 70°C) Storage temp: -40°F to 185°F (-40°C to 85°C) Humidity: 95% (non-condensing)	
Dimensions & Weight	7.01" x 4.72" x 1.81" (178 x 120 x 46 mm) 1.4 lbs. (0..64 kg)	
EMC Regulations	CE (IEC 60945 Emissions and Immunity), FCC Part 15 Subpart B	
Rugged Features	Water & dust resistance: IP67 Drop spec: 1.2 m (4 ft.) drop on all faces, edges and corners per MIL-STD-810G Electrostatic discharge: +/- 15kVdc air discharge, +/- 8kVdc contact discharge Tumble spec: 1,000 1.6 ft./0.5m tumbles (2,000 drops)	

Specification subject to change without notice. Battery performance will vary based on software applications

X90+

24 Channel L1/L2 GPS Receiver

KEY FEATURES

24 Channel L1/L2 GPS Receiver

Easy-to-Learn & Simple-to-Use

4 GB Internal Memory

Low Power Consumption

Compact, Rugged, Lightweight & Submersible IP67

Advanced Technology & Integrated Design

Easy Data Download via USB

Two-Year Warranty

The dual frequency X90+ GPS receiver was designed to enable every surveyor to access high precision, robust performances and reliable technology without the high price associated with other GPS systems. The X90+ breaks the price barrier for centimeter accuracy GPS positioning and provides a quick return on your investment compared to equivalent dual frequency GPS receivers presently on the market. Just position the X90+ and turn it on, the unit will automatically start recording GPS data and will continue storing data until the receiver is turned off.

Advanced Technology

There are four LED lights on the X90+. The RED LED shows the unit is on, the BLUE LED shows the unit is tracking satellites (blinks once for each satellite), the GREEN LED blinks when data is received from the serial port, and the YELLOW LED blinks each time data is stored.

The X90+ receiver acts just like a USB flash drive on your Windows computer, there is no special cables or drivers needed.

Integrated Design

The X90+ bundles simplicity, reliability, accuracy and affordability into a single integrated system that is perfect for static GPS observations.

The lightweight and compact design makes the X90+ easy for one person to carry, set-up and manage. The X90+ receiver integrates all components (e.g., GPS engine, antenna with built-in ground plane, and battery) into a single package.

CGO Software

The optional Geomatic Office (CGO) software is a desktop application software for post processing GNSS data.

CGO was designed to work for both static and Post Processing Kinematic (PPK) surveys.

X90+ Bundles

The X90+ can be bundled in various configurations. Contact MSI Support for more information on a system solution for your project.

Designed for OPUS

The X90+ is a simple, low-cost, L1/L2 GPS receiver specifically designed to use the National Geodetic Survey's **O**nline **P**ositioning **U**ser **S**ervice (OPUS).

The X90+ is customized to automate data submission to OPUS for sub-centimeter level post processing anywhere in the United States and this service is available at NO CHARGE.

OPUS requires minimal user input and utilizes NGS' software to computer the coordinates of the occupy point from NGS Continuously Operating Reference Station (CORS) Network. The resulting positions are accurate and consistent with the National Spatial Reference System (NSRS). After submitting a file to NGS a solution is returned via email.

Recently NGS introduced OPUS PROJECT which will allow users to submit multiple baseline files and process them using CORS sites in a true GPS network solution.

GNSS Two Meter Heavy Duty Tripod *(collapsible center)* MSPR $895

Product #	Description	MSRP
2190-01	X90+ GPS Static Receiver	$ 3,995
2275-12	12V External Battery Kit	$ 475
7190-45	CGO Office Software	$ 490

For additional information:

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X90+

Dual Frequency 24 Channel GPS Receiver
Technical Specifications

GPS Receiver	X90+
Type	24 Channels GPS 12x L1, 12x L2
	Advanced Multipath Mitigation - Optimized for low elevation satellite tracking
Update Rate	50 Hz
Cold Start Time	< 90s typical
Warm Start Time	< 30s typical
Hot Start Time	< 10s typical
Maximum Speed	1,850 kph (999 kts)
Post Processing Accuracy	
	RMS (67%) STATIC H: 5mm + 1ppm V: 10mm + 1ppm SBAS (WAAS) < 0.3 m Autonomous < 1.2 m
Communications	
Serial Ports	10 pin Lemo Connector (RS323 & USB)
USB	X90+ Receiver acts like a USB external hard drive
Protocol	RINEX and HCN outputs for GPS raw data
Data Storage	4 GB Internal Memory
Power	
External Power Input	9 - 18 VDC
Power Consumption	± 2.6 W
Battery Capacity	2200mAh
Battery Life	Up to 6 hours
Environmental/Mechanical	
Environmental Specification	Operating temp: -22°F to 140°F (-30°C to +60°C) Storage temp: -40°F to 158°F (-40°C to 70°C) Humidity: 100% (condensing)
Dimensions & Weight	3.35" x 7.85" (85 x 200 mm) 49 oz. (1.4 kg)
Regulations	CE
Rugged Features	Water & dust proof: IP67 Drop spec: 2.0 m (6.6 ft.) drop Shock: Survives a 2 meter drop onto concrete
Specification subject to change without notice. Battery performance will vary based on software applications	

MESA

Rugged Field Tablet

KEY FEATURES

Windows Mobile 6.5.3 Professional

Dust & Waterproof MIL-STD-810G & IP-67 Rated

5.7" Color VGA Display (640x480)

806 MHz Processor 256MB RAM & 4 GB Flash

Intelligent Li-ion Battery (16 hours operation)

Built-in Wireless Bluetooth® Technology

Available in 3 Models

I. Standard
(Bluetooth® & Wi-Fi)
II. GEO
(3.2MP Camera GPS)
III. GEO 3G
(3G GSM Modem)

One-Year Warranty

Bluetooth®

For additional information:

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The Mesa is a field rugged tablet with a large VGA color screen (640x480). Submersible and drop-proof. The Mesa will protect your data even in the most challenging environments. SD and SIM card slots provide limitless storage, and dual hot-swappable batteries will keep the Mesa Tablet productive even on the longest days.

Offered in three models; Standard, GEO, or GEO 3G, the Mesa Field Tablet has configurations for all budgets. All three models come standard with internal Bluetooth and Wi-Fi and the Standard unit can be upgraded to add a 3.2MP Camera plus GPS, or upgraded to the GEO 3G model to include cellular functionality.

Rugged and Reliable

The Mesa Tablet is built to survive harsh environments and has a strong lightweight magnesium alloy frame with easy to grip impact absorbing bumpers. It can survive immersion in water up to 3 feet and has an IP67 rating. It also meets rigorous military standard for shock (four feet multi drop onto concrete), humidity, and vibration. The SD card and SIM card slots are located under the enclosed battery for added protection and security.

Integrated Connectivity

Bluetooth® Class 1 comes standard to allow the Mesa tablet to easily communicate with surveying instruments. The Geo 3G has the ability to email files to the office. The Mesa Tablet also has built-in Wi-Fi wireless to connect to an office network or directly to the internet.

Large Color Display

The Mesa's Tablet 5.7" LCD screen can be viewed either in portrait or landscape mode and the display is bright enough to see in direct sunlight.

To make the Mesa even better, the one of a kind home screen puts the most used functions on the screen dashboard for easy access.

Geo and Geo 3G Options

The Mesa Rugged Tablet can be configured with GPS, a 3.2MP camera with auto focus and 3.5G cellular modem

With or without these options the Mesa makes for a great pairing with a robotic total station or RTK Rover. The Mesa Tablet also has an optional docking station for charging the batteries and data transfer to a PC.

Hot Swappable Batteries

The Mesa Rugged Tablet has two Li-ion battery slots and operates up to 16 hours. It takes only a 2 ~ 4 hour charge to fully charge both batteries. The batteries are hot-swappable in the field, so you can replace them without shutting the unit down.

Ultimate Surveying Tablet

The Mesa was designed to provide years of reliable operation for geospatial professionals. Its sleek and rugged design offers users the ultimate in flexibility. With an increasing need for access to field information, tablets are becoming essential for all businesses. The Mesa Tablet delivers on the demanding requirements of high quality and reliable data communication for land surveyors, civil engineers and contractors.

Product #	Description	MSRP
7105-01	Mesa Standard w/ Wi-Fi & BT	$ 2,995
7105-03	Mesa Geo w/ Wi-Fi, BT, GPS, Camera	$ 3,495
7105-05	Mesa Geo w/ Wi-Fi, BT, GPS, Camera + 3G GSM Cell Modem	$ 3,995

MESA

Rugged Field Tablet
Technical Specifications

Operating System	Genuine Windows Mobile® 6.5.3 Professional
CPU	Marvell PXA320 806MHz
Display	5.7" VGA (640 x 480 pixel - Antiglare), 262H colors (18 bit) Sunlight readable touchscreen Portrait or Landscape Orientation
Storage & Memory	256MB RAM 4GB Flash
Camera (Geo Models)	3.2MP Resolution with Autofocus
GSM (Geo3 Models)	Penta-Band 3G GSM/GPRS/EDGE/HSDPA 850/900/1800/1900/2100 MHz
Keyboard	15 Control Buttons (6 user re-assignable) Five way directional Navpad, Adjustable LED backlit
Expansion Slots	SD Card Slot - SDIO and SDHC
Communication Interface	Wi-Fi 802.11 b/g Bluetooth (v2.0 +EDR Class 1)
Ports	COM1, RS-232C 9 Pin D with 5VDC power on DTR pin USB Host A, USB Client Mini B 12VDC @ 800mA, 10-18V unregulated
Power	AC adapter (50W, 100-240V, 50 / 60Hz) Battery type: 7.4VDC, 2,550 mAh 18.9 WhrLi-Ion battery pack 16 Hours Operating Time 3.5mm Audio Jack, supports speakers, microphone or stereo output
Dimensions & Weight	5.3" x 7.9" x 2.0" (136 x 200 x 51 mm) 2.2 lbs. (998g) with Two Batteries
Regulation	CE, FCC, EN60950 Safety, RoHS Complaint
Rugged Features	Water & dustproof: MIL-STD 810G, IP67 Drop spec: 1.2 m (4 ft.) drop per MIL-STD-810G Magnesium alloy case front, plastic back
Environmental Specification	Operating temp: -22°F to 140°F (-30°C to 60°C) Storage temp: -40°F to 158°F (-40°C to 70°C) Humidity: 5% ~ 95% (non-condensing)

Specification subject to change without notice. Battery performance will vary based on software applications, wireless settings, power management settings, LCD brightness, etc., and environmental conditions. Battery life and charge cycles vary by use and settings. Battery life may be reduced in subzero applications.

Standard Configuration

- Li-ion Battery
- Hand Strap
- USB Download Cable
- Stylus
- Screen Protector
- Wi-Fi & Bluetooth

Geo Configuration

- Li-ion Battery
- Hand Strap
- USB Download Cable
- Stylus
- Screen Protector
- Wi-Fi & Bluetooth
- GPS
- 3.2 MP Camera

Geo 3G Configuration

- Li-ion Battery
- Hand Strap
- USB Download Cable
- Stylus
- Screen Protector
- Wi-Fi & Bluetooth
- GPS
- 3.2 MP Camera
- Cellular Modem

RANGER 3

Mobile Field Computer

KEY FEATURES

Windows Mobile 6.5 Professional

Water Resistant & Dustproof IP-67 MIL-STD 810G

Integrated Digital Compass, and GPS

Battery Life ±30 hrs.

Alphanumeric Qwerty Keypad

Bluetooth® Wireless Technology for cable free operation

9-Pin RS-232 Port, USB Host Port, Mini USB Client, & SDHC Card Slot

One-Year Warranty

The third generation Ranger 3 Field Computer offers a large bright touch screen, full alphanumeric, easy to operate keypad and is packed with the features surveyors depend on. Built rugged it meets rigorous MIL-STD-810G military standard for drops, vibration, humidity and extreme temperatures and with an IP67 rating, it's designed to keep your investment and your data safe. The Ranger 3 comes standard with 8GB memory, a SDHC card, Bluetooth, USB cable, and Wi-Fi. Choose from four different models of the Ranger with the features that best suit your needs and your budget.

Performance, Rugged and Reliable

The Ranger 3 features a Texas Instruments AM3715 processor with 256MB and 8GB of non-volatile internal memory, which can be upgraded via a SDHC memory card. The Windows® 6.5 Professional Operating System includes software such as Mobile Office. The removable 2600mAh battery will last for 34 hours and can be replaced in the field.

The Ranger 3 is tough enough to take anywhere because of its rugged construction and is certified to MIL-STD 810G (IP67), which makes the unit dust and water-proof. The Ranger 3 can withstand multiple drops to concrete from a height of 4.0 feet, and it weighs only 18.7 oz. The Ranger operates from –22°F to +140°F in rain or snow. The Ranger can operate in the blazing heat, subzero cold, driving rain or dusty sites. It can also survive twenty six drops from four feet onto concrete. The Ranger's 4.2" touch screen is specifically designed for viewing in direct sunlight and can be operated with gloves.

Integrated Connectivity

The Ranger 3 has a mini USB client (to connect to Microsoft ActiveSync or Windows Mobile Device Center), a USB host port (to connect to USB client devices) and a DB9 RS-232 connector (for use with serial devices). All Ranger 3 Computers have embedded Bluetooth wireless communication technology that can exchange information over a distance of up to 300 feet without requiring a direct physical connection. Also, the Ranger 3 series comes with built-in Wi-Fi capability, which can wirelessly transmit data to and from the internet via access points or hot spots.

The Ranger 3 comes with Windows Mobile 6.5 O/S, which gives an overall modern look to the included suite of Office Mobile 2010. Third party software designed for Microsoft Windows Mobile can be installed by running a setup program on the PC using either ActiveSync or Windows Mobile Device Center.

Ranger 3 Battery & I/O Connectors

Product #	Description	MSRP
7203-05	Ranger 3XR Mobile Field Computer	$ 7,650
7203-07	Ranger 3RC Mobile Field Computer	$ 6,850
7203-09	Ranger 3XC Mobile Field Computer	$ 4,095
7203-11	Ranger 3L Mobile Field Computer	$ 3,295

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RANGER 3

Rugged Mobile Field Computer
Technical Specifications

Operating System	Genuine Windows Mobile® 6.5 Professional
CPU	Texas Instruments Sitara AM3715 ARM Crotex A8
Display	4.2" VGA (640 x 480 pixel Sunlight readable Color TFT Touchscreen display LED Backlight
Storage & Memory	256 MB DDR SDRAM 8 GB NAND Flash
Keypad	Numeric Keypad with Backlighting, on-screen QWERTY
Expansion Slots	SD Card Slot - SDIO and SDHC (up to 16GB SDHC memory card*)
IO Interface	1 x USB host 1 x Mini USB client 1 x Power Jack 1 x 9-Pin Serial RS232 1 x SDHC Memory Slot Integrated sealed speaker & microphone Camera x 1 (optional)
Communication Interface	WLAN 802.11 b/g Bluetooth (v2.0 +EDR)
Additional Features	Integrated GPS, Wi-Fi 802.11 B/G Digital Compass with Accelerometer Optional 5 MP Color Digital Camera
Power	AC adapter (50W, 100-240V, 50 / 60Hz) Input DC 15.0 V 2.0A Battery: 11.1V 2600mAh, 28.9 Wh Li-Ion Rechargeable Pack
Software	Microsoft Office Mobile® Microsoft ActiveSync 4.5
Dimensions & Weight	7" x 3.8" x 1.5" (179 x 97 x 37 mm) 17.0 oz. (490g)
Regulation	Meets FCC Class B Requirements
Rugged Features	Water & dust resistance: MIL-STD 810G, IP67 Sealed against dust and accidental immersion Drop spec: MIL-STD-810G Method 503.5 [26 drops @ 4ft (1.2m) onto plywood over concrete Electrostatic discharge: +/- 15kVdc air discharge, +/- 8kVdc contact discharge
Environmental Specification	Operating temp: -22°F to 140°F (-30°C to 60°C) Storage temp: -40°F to 158°F (-40°C to 70°C) Humidity: MIL-STD Method 507.5 RoHS Compliant

Specification subject to change without notice. Battery performance will vary based on software applications, wireless settings, power management settings, LCD brightness, etc., and environmental conditions. As with all batteries, maximum capacity decreases with time and use and may eventually need to be replaced by a Getac service provider. Battery life and charge cycles vary by use and settings. Battery life may be reduced in subzero applications.

MODEL OVERVIEW	3XR	3RC	3XC	3L
ARM® Cortex	800MHz	800MHz	800MHz	800MHz
SDRAM	256MB	256MB	256MB	256MB
FLASH	8GB	8GB	8GB	8GB
GPS	YES	YES	YES	YES
Compass	YES	YES	YES	YES
Accelerometer	YES	YES	YES	YES
Bluetooth	YES	YES	YES	YES
Wi-Fi	YES	YES	YES	YES
5MP Camera	YES	YES	YES	**NO**
3G GSM Phone	YES	**NO**	YES	**NO**
2.4 GHZ Radio	YES	YES	**NO**	**NO**

MC-5

Mobile Field Computer

KEY FEATURES

Windows® Embedded 6.5 Professional Operating System

48 Channel GPS, Electronic Compass Altimeter & G-Sensor Accelerometer

Built-in 5 Megapixel Autofocus Camera

3.5" VGA Direct Sunlight Readable Display

Waterproof & Dustproof IP68 / MIL-STD 810G

RS232C & USB Ports

Wi-Fi, 3.5G WWAN & Integrated Long Range 2.1 Bluetooth®

Long Life 3.72V 5.6 Ah Li-Ion Battery

Two-Year Warranty

For additional information:

MSI Positioning Systems, LLC
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solutions@msigeo.com

The MC-5 from MSI Geosystems is the ideal rugged mobile field computer. Its flexible design and powerful functionality provides a rapid return-on-investment due to the ability to tailor the MC-5 to match the users field computing and data collection application. The MC-5 is a field-ready workhorse built for field use in any weather condition.

Typical applications for the MC-5 include: Surveying, Engineering, Construction, GIS Mapping, Wetland Delineation, Mining/Quarrying Surveys, Volume Determination, Environmental Mapping, Accident Reconstruction, Deformation Monitoring, as well as other applications requiring accuracy and precision of three-dimensional coordinates and/or geographic locations in a dynamic environment.

Performance

The MC-5 features a Texas Instruments AM3715 1GHz processor with 512MB and 8GB of internal memory, which can be upgraded to 40GB via a SDHC memory card. The Windows® embedded 6.5 Operating System includes software such as Mobile Office.The removable 5600mAh battery can be replaced in the field. A 12-32VDC power adapter/ charger is available.

GPS Receiver

The MC-5 has an internal 48 channel GPS module with a built-in GPS antenna, which can operate in urban areas and other types of hostile GPS environments for all sorts of survey applications.

5MP Camera

The MC-5 has an integrated 5 Megapixel auto focus camera with a built-in LED flash, which allows for in-field photo documentation.

Increase Productivity

The MC-5 delivers out-standing capabilities and is a powerful platform for mobile computing, GIS collection, and other field applications requiring a compact rugged mobile field computer.

With the compatibility of high capacity 32MB micro SDHC cards, the MC-5 is able to store large quantities of survey/mapping data and background maps.

Connectivity

The MC-5 allows for cable-free connection with most major brands of total stations and GPS receivers via its Bluetooth® modem and its compatibility with most major brands of survey and GIS software. The MC-5 offers USB and RS232 DB9 com ports, plus Bluetooth and Wi-Fi.

Built for Field Use

The MC-5 is tough enough to take anywhere because of its rugged construction. In addition to its IP68 rating, the unit is dust proof and water-proof and is certified to MIL-STD-810G.

The MC-5 can withstand multiple drops to concrete from a height of 5.9 feet, and it weighs only 18.7oz. The MC-5 operates in rain or snow from –22°F to +140°F. The MC-5's 3.5" touch screen is specifically designed for viewing in direct sunlight and can be operated with gloves.

Ergonomically Designed

The MC-5 is designed for optimal field use and is compact enough to fit comfortably in one hand. The MC-5 offers a new level of flexibility and functionality in a rugged handheld field computer.

Product #	Description	MSRP
7205-05	MC-5 Field Computer	$ 2,495

MC-5

Rugged Mobile Field Computer
Technical Specifications

Operating System	Windows® Embedded Handheld 6.5 Professional
Processor	Texas Instruments AM3715 1GHz
Display	3.5" VGA (480 x 640 pixel - 600 nits) Quadra-Clear™ Technology Sunlight Readable Display Pressure sensitive touchscreen
Touch Panel	Touchscreen Keypad with backlighting
Memory	512MB MDDR 256MB NAND Flash 8GB Internal Storage (iNAND) +32GB Optional via micro SDHC
Keypad	Nuance XT9® Soft input panel (SIP) Transcriber Handwriting Recognition Alpha/Numeric Keypad
IO Interface	1 x USB 1 x RS232 1 x Power Jack 1 x Office Docking Port 1 x Speaker 1 x Microphone 1 x Stylus pen
Communication Interface	WLAN 802.11 b/g Bluetooth (v2.1 +EDR Class 2)
GPS Sensor Specifications	Chipset: SiRF Star IV™ with WAAS/EGNOS Support Receiver type: L1 (C/A) Channels: 48 channel all-in-view tracking Update rate: 1 Hz Autonomous: 2.5 m (8.2 ft.) DGPS: 1~3 m (±6.56ft.) Cold start time: 35 sec average Hot start time: 1 sec average Reacquisition: 0.1 sec average
Software	Microsoft Internet Explorer Mobile® Microsoft Office Mobile Applications Microsoft Office Mobile®
Other Features	Auto Focus 5 Megapixel Camera Digital E-Compass & Altimeter
Security Features	Wi-Fi for WPA/WPA2 operation Encryption: WEP, AES, TKIP
Power	Power Consumption: 0.5W Battery type: 3.7V, 5600 mAh Li-Ion Rechargeable Battery Pack Operating Time: 12hrs (typical with Bluetooth®)
Dimensions & Weight	7" x 3.5" x 1.18" (178 x 89 x 30 mm) 18.69 oz. (530g)
Regulation	CE, FCC, UL, BSMI, NCC
Environmental	Operating temp: -22°F to +140°F (-30°C to +60°C) Storage temp: -40°F to +158°F (-40°C to +70°C) Humidity: 95% RH (non-condensing) Water & dust resistance: MIL-STD-810G and IP68 Certified Drop spec: 1.82 m (6.0 ft.) drop to concrete (x26) Tumble resistant for 1,000 cycles: 0.5m (1.6ft.)
	Specifications subject to change without notice.

MC-1

Mobile Field Computer

KEY FEATURES

Windows® Mobile 6.1 Operating System

3.7" VGA Color Direct Sunlight Readable Display

20 Channel SiRF III GPS Receiver

3.2 Megapixel Autofocus Camera

Compact, Rugged & Lightweight

Waterproof & Dustproof IP65 Rated

Mini USB 2.0 port

Integrated Bluetooth® Wi-Fi and GSM/GPRS

3.7 VDC 3,000 mAh Long Life Li-Ion Battery

One-Year Warranty

For additional information:

MSI Positioning Systems, LLC
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The MC-1 is a state-of-the-art Mobile Field Computer with an integrated GPS Receiver and auto focus camera running Windows® 6.1 Mobile. Designed for mobile field computing even under the most demanding conditions. The MC-1 is extremely affordable, and is the ideal field mobile computer for a large range of surveying, engineering and construction layout applications. The MC-1 offers fast processing power, rugged design, and data collection flexibility for efficient computing, data reduction, and data management even under the most demanding field conditions.

Advanced Technology

The MC-1 features a 624 MHz processor with graphics accelerator and 256 MB of internal memory, plus 512 MB flash memory. The MC-1 offers a new level of flexibility and functionality in a rugged handheld field computer. With the compatibility of micro SD cards, the MC-1 is able to store large quantities of survey data as well as background maps.

Built-in GPS Receiver

The MC-1 has a built-in 20 channel SiRF III chipset GPS module with a high sensitivity built-in antenna, which can work in urban areas and other hostile environments for GPS measurements. An optional GPS antenna is available.

Integrated Camera

The MC-1 has an integrated 3.2 MP auto focus camera, which allows for the capture of pictures for documenting the condition of assets and features in the field.

Built Tough for Field Use

The MC-1 is tough enough to take anywhere because of its rugged construction. In addition to its IP65 rating, the MC-1 can withstand multiple drops to concrete from a height of 4 ft. and it weighs only 12 oz.

The MC-1 will operate from -4°F to +140°F in rain or snow. The 3.7" touch screen is specifically designed for viewing in direct sunlight and has a built-in backlight for low light conditions. The MC-1 is compact enough to fit comfortably in one hand for daily use.

Increase Productivity

The MC-1 has exceptional capabilities and is a powerful platform for mobile field computing, mapping and other collection application. With an integrated GSM/ GPRS modem, the MC-1 offers advanced methods needed to access the internet and to exchange project files to/from the office. The MC-1 operates all day on its rechargeable Li-Ion polymer battery.

Connectivity

The MC-1 allows for cable free connection with most major brands of robotic total stations and GPS receivers via its integrated wireless Bluetooth® modem.

With an integrated GPRS modem the MC-1 offers internet access to exchange files with the office. The built-in communication technology of the MC-1 enables secure connectivity to the internet virtually anywhere.

Product #	Description	MSRP
7201-01	MC-1 Field Computer	$ 1,295

MC-1

Mobile Field Computer
Technical Specifications

Operating System	Windows® Mobile 6.1 Operating System
Processor	624 MHz Intel X-Scale Processor
Display	3.7" VGA (480 x 640 portrait) Sunlight Readable Display with Backlight Pressure sensitive touchscreen Touchscreen Keypad
Memory	256MB RAM 512 MB Flash 8GB Internal Storage (MicroSD)
Communication	Wi-Fi 802.11 b/g Bluetooth (v2.1 +EDR Class 2)
Interface	1 x Mini USB 1 x Power Jack 1 x Speaker 1 x Microphone 1 x Stylus pen
Camera	3.2 Megapixel Camera with Autofocus
GPS Sensor Specifications	Chipset: SiRF Star III with WAAS/MSAS/EGNOS Support Receiver type: L1 (C/A) Channels: 20 channel Update rate: 1 Hz Autonomous: 3.0 m (8.2 ft.) DGPS: 1~3 m (±6.56ft.) RMS Cold Start: 50 sec average Warm Start: 35 sec average Hot start time: 1 sec average NMEA 0183 Protocol
Software	Microsoft Mobile Internet Explorer Microsoft Windows Live
Power	Battery type: 3.7DC 3,000 mAh Li-Ion Polymer Rechargeable Battery Pack Operating Time: ±10hrs
Dimensions & Weight	6.3" x 3.4" x 1.2" (158 x 85 x 25 mm) 12.0 oz. (340g)
Environmental	Operating temp: -4°F to +140°F (-20°C to +60°C) Storage temp: -22°F to +158°F (-30°C to +70°C) Humidity: 95% RH (non-condensing) Water & dust resistance: IP65 Shock: 1.2 m (6.0 ft.) drop to concrete
Package Contents	MC-1 Field Computer Li-Ion Battery 2GB Micro SD Card USB Data Cable AC Power Adapter Stylus Pen Hand Strap
Specifications subject to change without notice	

SurvCE

Data Collecting Software

KEY FEATURES

Easy to Learn

Simple to Operate

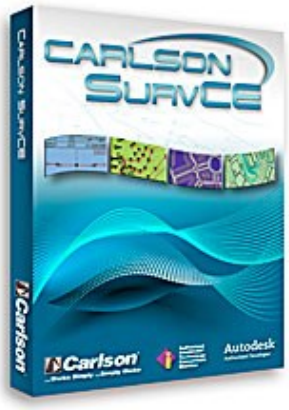
Enhanced Graphics

Feature Coding

Able to run on most field computers and data collectors on the market today

Interfaces with most robotic total stations and GNSS receivers on the market today

SurvCE is a complete data collection system for both RTK GPS Systems, robotic total stations and conventional total stations. It supports the widest range of instrumentation. SurvCE is the first choice in field data collection software with advanced, yet easy to use functionality. SurvCE contains the most complete tool set for file manipulation including: point storing, stakeout, line work, field-to-finish, DWG and DXF support, background maps, COGO, and advanced roading. The flexible, modular structure of SurvCE enables the user to meet the changing needs of today's job and tomorrow's opportunity, rich attributing, full editing in the field and export to industry standard data formats provides true field-to-finish capabilities.



Enhanced Graphics

SurvCE has a new colorful look, and Icons have been standardized to create continuity throughout the software, while modernizing the user experience. The new Hot List lets users jump to routines that previously had shortcuts without having to memorize key strokes.

Feature Coding

SurvCE can collect parallel lines using the offset of a line command and closing a rectangle by three points using the rectangle routine. In the setting section, the user can even auto compute and store the additional points at the line vertices that were created by the software. SurvCE allows users to code in numerous coding styles that may be defined by their office CAD.

Easy to Use

The newly released SurvCE version 4.1 offers users advanced functionality, ease of use, and sheer capability in a complete data collection software.

Job Settings

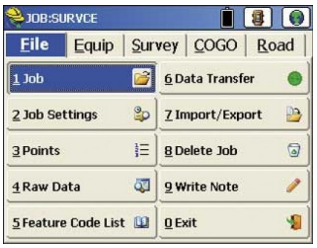
SurvCE uses a template DXF file for new jobs so all CAD layers and colors are automatically created. It also has the option to auto-load cutsheets and control files from previous projects.

SurvCE has the ability to turn off the auto descriptions in stakeout and customize stakeout routines. SurvCE can also interval the point ID automatically.

Settings

SurvCE easily manages job settings, network and radio configuration. It supports a wide range of instruments from various manufacturers. SurvCE keeps track of every measuring device and keeps them completely separate. This includes base stations, RTK rovers, total stations, etc. so choosing various types of instrumentation is quick and easy. Instrument configuration has been enhanced to allow switching between devices easy and final.

SurvCE supports all GNSS/ GPS network protocols, such as NTRIP, TCP and UDP, all setting needed for RTK connection are only done once, plus SurvCE will auto-matic reconnection to the network if the connection is loss



Product #	Description	MSRP
7721-15	SurvCE TS Data Collection SW	$ 995
7721-25	SurvCE GPS Data Collection SW	$ 1,250
7721-35	SurvCE TS + GPS Data Collection SW	$ 1,995
7721-45	SurvCE Robotics Data Collection SW	$ 1,495
7721-55	SurvCE Complete Data Collection SW	$ 2,495

For additional information:

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Fax: 678-804-3448
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SURVCE

Data Collection Software
Key Features V4.1

SurvCE 4.1 is available in more than two dozen languages. These include: English, Spanish, French, Portuguese, Czech, Dutch, simplified Chinese, Korean, Greek, Italian, Polish, Hungarian, Swedish, Latvian and more.

New SurvCE 4.1 features include:

- Supports full output reporting in GNSS analysis
- GPS base records from the raw file may be processed into the CRD File
- Has full compatibility with the Stewart Weir Software
- Enhanced performance on new capacitive screen data collectors
- Description edit boxes now allow easy access to feature code list
- Field-to-Finish supports creating circles
- Point project automatically creates a customizable output file containing station, offset, & elevation
- Allows GIS storing in any stakeout routine
- Supports text import from drawings
- RW5 file now reads and writes faster
- Supports freehand sketching in the map screen
- Supports scalable pixels in background images
- Calculate Area/ Sliding uses a new faster and more robust method
- Ability to stake roads by complete LandXML Road Model
- Ability to use point “blocks” from drawings as point symbols or as objects to snap to for stakeout or alignments
- Messaging and file transfer office to field or peer-to-peer in field
- New techniques for best fit smooth curves and tangent curves using Field-to-Finish
- All commands are visible in each menu, preventing the need for Up-Down Arrow Keys
- Point plot updated as points are collected in the field
- Hot List lets users jump to the routines that previously had shortcuts, without having to memorize key strokes
- Software can compute volumes between two surfaces, one surface and an elevation
- Software can be used to collect trigonometric level loops and digital level loops
- Level Loops can be processed and adjusted on the data collector and all project coordinates can be updated
- Software supports several GPS/GNSS network protocols, such as NTRIP, TCP and UDP
- Use of RTCM 3.1 messages from virtual reference stations to auto-compute grid and geoid shifts
- Software keeps track of every instrument, including all base stations, rovers and total stations
- Software supports an unlimited number of localization points. Project scale settings are located in the localization dialog
- Software allows users to “Configure” how each angle reading is measured with regard to direct or reverse
- Software supports station equations
- Software has the option to use DXF file templates for new jobs, so all layers are colors are automatically created
- Software has the option to auto load cut sheets and control files from previous jobs
- Software has optional on-board help files

MAGNET

Field and Office Software

KEY FEATURES

MAGNET FIELD

MAGNET OFFICE

Choice of 12 Modules

Import/Export Various File Formats

Advanced Calculations

Cloud Connectivity

Easy-to-Learn Easy-to-Use Interface

MAGNET FIELD is a powerful and intuitive application software that enables users to collect surveying and mapping data as well as construction layout using total stations, GPS/GNSS receivers, digital levels, etc.

A. Magnet Field Site is a customized version of Field for construction job site activities such as stakeout, grade checking, volume estimates and roading.

B. Magnet Field Layout is a customized version of Field that increases building layout productivity.

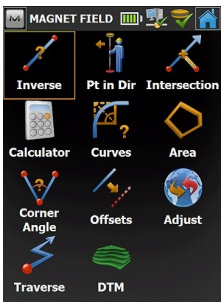
C. Magnet Mobile Exchange is a free utility that connects to Magnet Enterprise to exchange any type of file from the field with the office.

MAGNET OFFICE is a processing, design and drafting software suite that meets the demands of land surveyors, civil engineers, and construction contractors. Office is available in five version: Tools, Topo, Layout, Site, and Site Resurfacing.

1. Magnet Office Tools has advanced data processing and adjustment of total stations, levels and GNSS/GPS raw data. Tools can be installed as a standalone or as an add-on to Auto-CAD.
2. Magnet Office Topo includes drafting and design tools for property plots, subdivisions and land development projects.
3. Magnet Office Layout includes the editing and drawing tools required to easily make points from objects and take a building plan into the field for layout.
4. Magnet Office Siteis a full featured design and drafting tool for any machine control, land development, and road design project.
5. Magnet Office Site with Resurfacing includes all the features of Site, but with additional advanced modules for paving and resurfacing analysis and design.

MAGNET ENTERPRISE is a web browser based environment that simplifies managing field and office data in the Cloud. Track assets and communicate with everyone involved on your projects. Log-in from a web browser for live updates thereby saving time and allowing for real-time collaborating. Magnet Mobile Exchange and Magnet Enterprise is the perfect pairing for exchanging files between the field and the office. No matter what data collecting software is used in the field. Magnet Mobile Exchange is a free utility to exchange files back to the office.

CLOUD CONNECTIVITY will allow users to collaborate with field crews, survey project managers, and office personnel in real-time!



Product #	Description	MSRP
7610-01	Magnet Field Basic	$ 500
7610-02	Magnet GPS Data Collection	$ 1,000
7610-03	Magnet Field Site	$ 1,000
7610-04	Magnet Field Layout	$ 1,500
7620-11	Magnet Office	$ 500

For additional information:

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solutions@msigeo.com

MAGNET

Field and Office Software
Features/Functions 2.5

Magnet Software V2.5 guarantees to streamline workflow for surveying and engineering professionals. It is a high graphical and intuitive data collection software that is compatible with different file formats and offers the ability to calculate and compare land surfaces, yet easy to use.

Magnet Software V2.5 features:

- Choice of 12 modules
- Magnet Field contains functionality and instrument drivers
- Magnet Field survey data can be published to the Cloud
- Survey Managers can review field data in a browser environment
- Magnet Field Site is a customized version of Field for construction job sites
- Magnet Field Layout is a customized version of Field for stakeout, grade checking, volume and roading
- Magnet Office is a processing, design and drafting software suite - available in five versions
- Magnet Enterprise is a web browser based program that simplifies managing field and office data in the cloud
- Magnet Mobile Exchange is a free utility that connects to Magnet Enterprise to exchange files
- Vast Library of Import/Export File Formats
- Enhanced graphical data collection and stakeout
- Simple layout menus
- On demand data recall
- Advanced Roading including Road Strings, Real-Time Roads and staking routines
- View background maps/images under surveyed points and lines
- Connect to local networks, Wi-Fi and cellular from the field
- Surface staking with automatic DTM creation and volume calculations
- Create customized reports of field work
- Optional Cloud Connectivity

DIGITAL LEVELS

SDL 1X/SDL 30/SDL 50

KEY FEATURES

Auto Focus

View Finder

SDL 1X Model
0.2mm Precision

SDL 30 Model
0.4mm Precision

SDL 50 Model
0.6mm Precision

Orion Models
2.0mm Precision
at 30M

Remote Trigger

Easy of Use

100m Bluetooth®
Wireless Technology

One-Year Warranty
for all Models

Bluetooth®

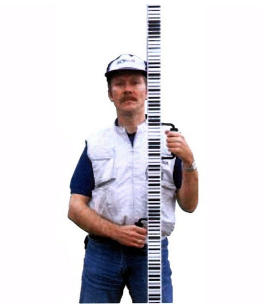
*Models SDL 1X/SDL 30/SDL 50

The SDL 1X is designed to achieve the highest precision and productivity in leveling and height measurements. The SDL 1X sets the ultimate benchmark for precision digital levels with innovative features like intelligent auto focus, View Finder, and wireless operations. When vertical precision measurements matter, the SDL1X is the ideal digital level for all applications.

The SDL 30 was designed to take highly accurate height and distance measurements. This digital auto level has a large internal memory, automatic recognition, wave and read technology and a weather resistant design for use in tough environments. Featuring a working range of up to 100m (328ft) and an accuracy of 0.4mm per kilometer. This digital automatic level has four measurement modes; single fine, repeat fine, average and tracking.

The SDL 50 provides superior measurement capability under a variety of environmental conditions. Even when the staff surface is partially shaded, or in dim lighting conditions the SDL 50 consistently provides reliable measurements. The SDL50 automatically recognized directions of RAB staffs and displays the results with a minimum sight when the staff is inverted.

The Orin 2LS Digital Auto Level Series was designed for any small site leveling project. This precise digital level has a working range of 164 ft. (50m), a long battery life and a large backlit LCD screen. The Orin 2LS has an easy point and shoot design with a fine adjustment knob for focusing. The Orin 2LS can be ordered with either a 24X telescope or a 20X telescope.



BGS 50 16ft Barcode Staff
MSRP $735

Product #	Description	MSRP
5201-32	SDL 1X Advanced Digital Level	$ 6,995
5230-32	SDL 30 Digital Level (32X)	$ 3,330
5250-28	SDL 50 Digital Level (28X)	$ 2,215
5402-24	Orion 2LS Digital Level (24X)	$ 750
5402-20	Orion 2LS Digital Level (20X)	$ 650
5550-15	BGS 50 5M Barcode Staff	$ 735
5550-16	BGS 50 16ft Barcode Staff	$ 735
5540-14	BGS 40 4M Barcode Staff	$ 570
5530-55	BAS55 5M Barcode Staff	$ 150

For additional information:

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solutions@msigeo.com

DIGITAL LEVELS

SDL 1X / SDL 30 / SDL 50

Technical Specifications

Telescope	**SDL 1X**	**SDL 30**	**SDL 50**
Image	Erect	Erect	Erect
Magnification	32x	32x	28X
Effective Aperture	45mm	45mm	36mm
Length		171mm	
Field of View	1°20’	1°20’	1°20’
Minimum Focus	1.5m	1.5m	1.5m
Resolving Power	3.0”	3.0”	3.5”
Compensator	**SDL 1X**	**SDL 30**	**SDL 50**
Type	Pendulum Compensator with Magnetic Damping		
Working Range	± 12’	±15’	±15’
Setting Accuracy		± 0.3”	
Vertical Compensator Range		± 6’	
Vertical Compensator Accuracy		± 3”	
Accuracy	**SDL 1X**	**SDL 30**	**SDL 50**
Electronic (ISO 17123-2) BIS30A Staff BIS20/30 Staff BGS Staffs Visual	 ± 0.2mm ± 0.3mm ± 1.0mm ± 1.0mm	 ±0.4mm ±0.6mm ±1.0mm ±1.0mm	 ±0.6mm ±0.8mm ±1.5mm ±2.0mm
Distance Accuracy		± 0.1% x D ± 0.1% x D	
Measuring Time: Single/Repeat Average Repeat	 	 < 2.5 sec + 2.5 sec < 1.0 sec	
General Specifications	**SDL 1X**	**SDL 30**	**SDL 50**
Display		LCD Graphic Display	
Keyboard			
Auto Power			
Internal Memory			
Interface			
Bluetooth			
Dust & Water Protection		IP54	
Operating Temperature		-20°C to +50°C (-4°F to +122°F)	
Dimension (W x D X H)		226mm x 260mm x 200mm	
Weight	3.5kg	2.4kg	2.4kg
Battery (BDC70)		7.2V	
Operating Time (+20°C)			

MSI SYSTEMS CATALOG

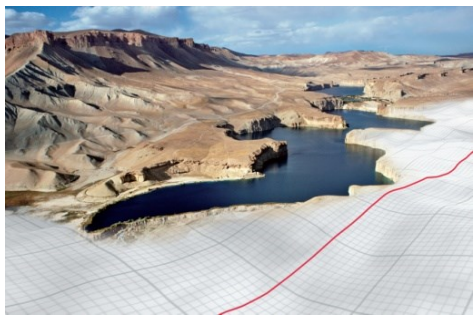
INNOVATIVE SOLUTIONS

for Precise Measuring & Positioning Applications

Precise determination of distances, angles, elevations, coordinates and geographic positions has been a key element in the development of human civilization since the beginning of recorded history. Surveying, now known as Geomatics, is an essential requirement in the design, planning and execution of all types of construction and transportation projects, as well as for the location and determination of property lines, property corners, easements, etc.

MSI's specialized set of technical expertise in surveying, engineering, and construction uniquely enables us to develop "turnkey" solutions for users who require precision of geographic location or three-dimensional coordinates in dynamic environments.

MSI's focus is on providing solutions to solve complex measuring and positioning problems. It has been our experience that land surveyors, civil engineers and contractors precise measuring problems rarely fit a cookie-cutter solution. Call today to speak with an industry veteran to discuss how MSI can assist you on your next project.



To discuss your specific
project requirements with
MSI Technical Support

CALL 678-765-7824

solutions@msigeo.com

MSI SYSTEMS CATALOG

TECHNICAL SUPPORT

MSI Technical Support

MSI's Technical Assistance Center (MTAC) offers comprehensive technical support from a team of specialists. With years of "hands-on" field experience, MSI's technical support members have become experts in precise measuring and positioning. MTAC truly understands the importance of competent support personnel that can answer complex technical questions without having to rely on others to provide them with information. Technical support is available at no charge to MSI's customers for the first year of ownership.

MSI Services

MSI's management believes Quality Products demand Quality Support and Service. A key ingredient in MSI's total customer care is service, which includes the repair of instruments in a timely manner by experienced personnel. MSI's Service Center is one of the most competent repair facilities in North America, with special expertise in total station and robotic repairs. Services offered by MSI's Service Center include: compete calibration, testing, firmware updates and routine maintenance. All repairs are backed by a ninety day guarantee. Regular servicing, calibration and inspection of precise measuring equipment is vital to ensure optimum performance.

Every instrument which goes through MSI's Service Center is entered into a maintenance database, which allows for the tracking of individual instruments and the ability to send out reminders when calibration and/or service is due.

MSI Training

MSI's customers have discovered they are able to increase both productivity and efficiency on projects requiring precise measuring and positioning technologies, such as robotic total stations, field computers and GNSS systems by investing in training. MSI offers a series of customized training programs designed to meet the needs of geospatial professionals.

MSI's training will take the mystery out of precise angle and distance measuring and/or three dimensional positioning. Training covers basic principles so your staff can have a working understanding of each system component and how they interact with each other. MSI's management is dedicated in providing our customers with the best possible solutions, which includes product training that is essential for maximizing the potential of the investment in new equipment and to decrease potential errors in the field.

On-site training programs available from MSI include: Total Station Training; GNSS/GPS Training; Data Collecting; and Customized Field-to-Finish Training. MSI's flexible training programs are designed to suit any company's needs, experience level and timetable.

Precise Monitoring

Demand is ever increasing for precise deformation monitoring to ensure the stability of aging infrastructure that could be impacted by nearby construction. MSI's Technical Assistance Center (MTAC) in conjunction with various software developers and private consultants can assist our customers in performing precise monitoring services.

MSI Geotechnical Systems can provide continuous 24/7 remote data collection, data analysis and early warnings to alert personnel of any possible structural movement. This real-time monitoring service is capable of serving a wide spectrum of clients including highway departments, contractors, mines, railways, and the US Corps of Engineers.

ORDERING

Ordering Options

Ordering by phone is a good way to confirm product availability, check on current pricing and/or delivery schedules. Call between 8:00am and 5:00pm Eastern Time, Monday through Friday. If your call is after normal business hours, leave your order via voice mail and it will be handled the first thing the next business day. Three easy ways to order - Phone, Fax or Email:

Phone:	Fax:	Email:
678-765-7824	678-804-3448	solutions@msigeo.com

Payment Options

Paying for orders should be just as easy as placing orders. MSI offers five ways to pay for your order: leasing, credit cards, open account, bank/wire transfer, check/money order. We accept Company Checks, Money Orders, Visa, MasterCard, Discover, AMEX, and PayPal.

Company Checks/Money Order

When sending a check and/or money order with your order, please include all shipping charges, and sales tax (if applicable) and any additional charges such as insurance costs.

Credit Cards

If you would like to use a credit card over the phone or by fax, or by email be sure to indicate the type of card, the name on the card, the card number, expiration date, security code and the current mailing address for the credit card statement.

Charge to Account

With established credit, you can charge items to your own MSI Open Account. Terms are net 30 days from the date of the order. To open your account with MSI complete and fax in a credit application.

Leasing

Contact MSI on details regarding financing options. MSI has developed close working relationship with various finance companies, which specialize in surveying instruments and equipment.

Shipping Options

Shipping via UPS ground is free of charge on orders of $1,000 or more. MSI will charge normal UPS ground rates for repaired instruments and oversized items.

MSI SYSTEMS CATALOG

Reasons To Buy From MSI

MSI Geosystems stands behind all products and services with an unconditional “money-back” guarantee. If for any reason you are unhappy with any part of your order, MSI will replace the item or refund your money with no questions asked.

1. **UNBEATABLE PRICING -** Value Priced Innovative Measuring & Positioning Solutions
2. **QUALITY PRODUCTS** - All instrumentation thoroughly tested and evaluated prior to shipping
3. **PERSONALIZED SERVICE** - All customer’s inquires are personally answered
4. **FAST SHIPPING** - In-stock orders normally ship within one to two business days
5. **HONESTY & INTEGRITY** - Customers treated right from the beginning
6. **TECHNICAL SUPPORT** - MSI’s Technical Assistance Center staffed by industry professionals
7. **TECHNICAL SERVICES** - MSI’s Service Center is one of the most competent repair facilities in N.A.
8. **PRODUCT TRAINING** - MSI offers a series of customized “on-site” training programs
9. **HASSLE FREE RETURN POLICY** - In the unlikely event you experience any problems
10. **SATISFACTION GUARANTEE** - Money back with no questions asked! If any product purchased from MSI does not meet your expectations for any reason, simply return it for a prompt and courteous refund

NOTES & COMMENTS

Innovative Measuring & Positioning Systems

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Innovative Measuring & Positioning Systems

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Other trademarks and trade names are those of their respective owners.
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